Space Weather Forecast

Issued on Monday, 22 April 2024 at 13:10 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate class flares expected (R1/R2 blackouts). Slight chance of isolated Minor Geomagnetic Storm intervals from peripheral coronal mass ejection effects.

IMPORTANT NOTICE: On the 23rd of April between 1500 UTC and 2100 UTC, a significant data outage at NOAA SWPC is expected which will impact most of our observational data feeds and some models. We may receive data intermittently through that period. MOSWOC service will continue on contingency. Alerts and warnings will be sent using alternative data, if available. The planned data outage may be postponed in the event of significant space weather.

Solar Activity: Moderate with occasional Moderate flares observed, the most intense from the southwest of the disc amongst a complex of sunspots and was observed at 21/252UTC. This complex contains four sunspot of the fourteen sunspot regions currently on the visible side of the solar disc. Other notable regions including a moderately sized sunspot in the northwest, however this remains stable. The most rapid growth was observed in two regions in the northeast, although these also remain simple and stable bipolar regions. Spot growth also occurred on the southeast disc, however these spots remain small and simple.
The Moderate flares resulted in further weak and apparently southward directed coronal mass ejections (CMEs), which may give glancing blows to the Earth.

Solar Wind / Geomagnetic Activity: Ongoing fast wind influence from a coronal hole with solar wind speeds slightly elevated throughout, 420-480 km/s. Interplanetary Magnetic Field (IMF) was weak with the north-south component weakly negative (southward) for much of the period. Geomagnetic activity was Quiet to Active (Kp2-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Occasional Moderate flares are expected to continue, with a slight chance of isolated Strong flares. The greatest risk of these coming from the sunspot region in the southwest.

Solar Wind / Geomagnetic Activity: There are several Coronal Mass Ejections that have been modelled and are anticipated to pass close to Earth through the period, with the potential glancing interactions. This gives low confidence for detail of the geomagnetic forecast. The slightly elevated solar wind from a coronal hole is likely to gradually decline towards Slow levels in coming days. Quiet to Unsettled geomagnetic activity is forecast to become mostly Quiet with isolated Unsettled intervals by day 2 (23 Apr). Any CME arrivals however, potentially give a chance of isolated Active intervals and a slight chance of briefly reaching G1 Minor Storm level.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Met Office Space Weather Forecast

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is likely to persist at background, but with a chance of rising with any larger flares that occur. This will bring a slight chance of reaching the S1 Solar Radiation Storm level.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	5	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	80	75	70	60
Very Active	R3 to R5 X	No	15	15	10	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	15	15
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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